PHILADELPHIA & READING RAILROAD, PEDESTRIAN SUSPENSION BRIDGE (Swinging Bridge)
Foot of Sixth St. at Schuylkill River
Reading
Berks County
Pennsylvania

HAER No. PA-120

HAER
PA
6-READ,
12-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
1849 C Street, NW
Washington, DC 20240

HAER
PA
6-READ,
12-

HISTORIC AMERICAN ENGINEERING RECORD

PHILADELPHIA & READING RAILROAD, PEDESTRIAN SUSPENSION BRIDGE
(Swinging Bridge)

HAER No. PA-120

Location:	Foot of Sixth St. at Schuylkill River, Reading, Berks County, Pennsylvania. (Formerly spanned Philadelphia & Reading main line at Reading Depot, Reading, Berks County, Pennsylvania.)
USGS Quadrangle:	Reading, Pennsylvania (7.5-minute series).
UTM Coordinates:	18/421550/4465960
Dates of Construction:	1886-87.
Basis for Dating:	Secondary sources.
Date of Alteration:	1983.
Designer:	William Hildenbrand (Engineer, John A. Roebling's Sons Co.).
Fabricator / Builder:	John A. Roebling's Sons Co. (Trenton).
Present Owner:	Berks County.
Structure Uses:	Pedestrian bridge (initial); monument (subsequent).
Structure Type:	Suspension.
Significance:	The Philadelphia & Reading Railroad's pedestrian suspension bridge was typical of short spans produced by the John A. Roebling's Sons Company, a major designer and builder of suspension bridges in the U.S. Although the bridge was partially demolished in 1983, one tower was relocated to a county park, where it now stands as a state civil engineering landmark.
Historian:	Justin M. Spivey, April 2000.

Description and History

In 1886, the Philadelphia & Reading Railroad (P&R) decided to provide a safe pedestrian route across its main line and yard tracks east of the Outer Station in Reading.[1] With the closest underpass located two blocks north of the station, pedestrians coming from the east likely risked walking directly across the tracks instead of making the detour. Clearly, a bridge was needed at the station itself, without intermediate piers or columns that would hamper future rearrangement of tracks. A suspension bridge would have been an attractive choice for the light pedestrian loading, because a long truss would have consumed a great amount of material just to support its own weight.

It is not known whether the P&R first solicited bids from other firms, but it eventually contracted with the John A. Roebling's Sons Company of Trenton, New Jersey. Roebling engineer William (or Wilhelm) Hildenbrand designed the structure in October 1886, and it was completed the following year.[2] Hildenbrand is associated with John Roebling's best-known suspension bridges, serving as a draftsman on the Brooklyn Bridge, and engineering an 1898 retrofit of the Covington-Cincinnati Bridge over the Ohio River. Undoubtedly he designed many smaller spans built by the Roebling company.

Few short-span suspension bridges survive in Pennsylvania, however.[3] Reading's suspension bridge is no exception. The Reading Company, successor to the P&R, closed the span in 1964 and removed the approaches in 1967. The local chapter of the American Society of Civil Engineers (ASCE) completed a study for its preservation in May 1983, proposing that the bridge be disassembled and re-erected elsewhere. But on 7 October of that year, Conrail, which had since acquired the Reading Company, unexpectedly hired the Empire Wrecking Company of Reading to raze it. Conrail cited safety reasons for what local papers called a "surprise demolition."[4] In response to public outcry, Empire Wrecking agreed to donate the parts to Berks County.[5] One tower of the bridge was subsequently rebuilt in a county park along the Schuylkill River, and designated a state civil engineering landmark.

Although the bridge no longer stands, surviving drawings indicate its original appearance.[6] The towers were spaced 275'-0" apart on center. Each consisted of two trussed obelisks tapering from 10'-0" square bases, spaced 17'-0" apart on center and connected by a lattice arch. Each obelisk measured 46'-3" along the slope, and was topped with an ornamental casting that protected the cable saddles. The main cables consisted of three 1-5/8"-diameter wire ropes. A 6'-0"-deep stiffening truss, divided into 42 panels, hung from 3/4" hanger rods. The trusses, built on the Howe pattern, had 6" x 8" wooden chords and 3" x 4" wooden diagonal members socketed into cast-iron impost blocks, all held together by tensioned 7/8"-diameter vertical iron rods. Additional diagonal cables, a Roebling trademark, connected from the top of each tower to the trusses' lower chords at panel points L5, L8, and L11. After passing over the towers, both main and diagonal cables descended into heavy masonry anchorages. The west anchorage, near the Outer Station, began 76'-0" from the center of the tower. On the east, the anchorage sat on a slight incline, and was therefore only 52'-0" from the center of the tower. One final set of cables, 3/4" diameter and extending horizontally from the trusses' lower chords at panel point L14 to the outside corner of each tower, provided lateral bracing. These may have

been installed at a later date to reduce the oscillations that earned the span its nickname, "Swinging Bridge."

Notes

1. On the Outer Station, see Benjamin L. Bernhart, *The Outer Station* (Reading, Pa.: self-published, 1991); or Vance P. Packard, "Outer Station and Swingbridge," Berks County, Pennsylvania, National Register of Historic Places Nomination Form, 1977, U.S. Department of the Interior, National Park Service, Washington, D.C.

2. Edward M. Kutsch, letter to author, 25 Jan. 2000.

3. A recent survey of nineteenth-century suspension spans turned up only three survivors; see U.S. Department of the Interior, HAER No. PA-461, "Lower Bridge at English Center," 1998, Prints and Photographs Division, Library of Congress, Washington, D.C.

4. Connie Leinbach, "Destroyed: Swinging Bridge Lost in Surprise Demolition," *Reading Times,* 8 Oct. 1983.

5. J. Earl Ruthardt, "Swinging Bridge May Be Salvaged," *Reading Times,* 10 Oct. 1983.

6. "Suspension Foot Bridge at Upper Station, Reading, Pa., Reading Div. P. & R. R. R., Notes of March 3rd & 4th 1892," source unknown, copy drawn by Edward M. Kutsch, 25 Apr. 1977; and "Foot Bridge across the Railroad Tracks at Passenger Station, Reading Pa., Designed by John A. Roebling's Sons Co., by W. Hildebrand [sic] Engr., October 1886," source unknown; both provided by Edward M. Kutsch, 25 Jan. 2000.

Additional Sources

1. American Society of Civil Engineers, Reading Branch, *Report of the Swinging Bridge Study* (Sbillington, Pa.: Reading Branch, 1983).

2. American Society of Civil Engineers, Reading Brancb, *Report of the Swinging Bridge Reconstruction Study* (Shillington, Pa.: Reading Branch, 1988).